



SAMPLE DESIGN AND ESTIMATION PROCEDURES FOR 2019 HOUSEHOLD INCOME & EXPENDITURE SURVEY 2019

Sampling procedure for Administrative islands (excluding Labour quarters)



(c) NBS Maldives

All rights reserved. Requests for permission to reproduce or translate this publication [whether for sale or for noncommercial distribution] should be addressed to NBS Maldives.

The views and opinions expressed in this report are those of the author and do not reflect the official policy or position of the National Bureau of Statistics. Assumptions made within the analysis presented here are not reflective of the position of the Government of the Republic of Maldives.

Written by:	Ms. Aishath Laila
Checked and verified by:	Ms. Aishath Shahuda
Layout and design by:	Aminath Musfiqa Ibrahim



SAMPLE DESIGN AND ESTIMATION PROCEDURES FOR 2019

MALDIVES HOUSEHOLD INCOME AND EXPENDITURE SURVEY (HIES)-
SAMPLING PROCEDURE FOR ADMINISTRATIVE ISLANDS

EXCLUDING LABOUR QUARTERS

CONTENTS

1. INTRODUCTION	5
1.1 BACKGROUND	5
1.2 SURVEY OBJECTIVES	7
1.3 IMPORTANCE AND USE OF HIES RESULTS	7
1.4 POPULATION COVERED	8
2. ADMINISTRATIVE ISLANDS (CORE) SAMPLE	9
2.1 HIES 2016	10
2.2 SAMPLE FRAME	10
2.3 FIRST SAMPLING STAGE - SELECTION OF EB	11
2.4 LISTING OF HOUSEHOLDS	13
2.5 SECOND SAMPLING STAGE - SELECTION OF INDIVIDUALS	13
2.6 SURVEY WAVES & TEMPORAL ALLOCATION	14
3. INTERRUPTION OF THE SURVEY DUE TO COVID-19	15
3.1 ESTIMATION PROCEDURES	16
3.2 WEIGHTING PROCEDURES	16
3.3 HOW THE ADJUSTMENT OF THE WEIGHTS WAS PRODUCED.	17
BASIC WEIGHTS	17
3.4 ADJUSTMENTS FOR THE NON-INTERVIEWED ENUMERATION BLOCKS	18
3.5 ADJUSTMENTS FOR THE NON-RESPONSE	19
3.6 FINAL WEIGHTS	20
4. APPENDIX	21
TABLE 1. DISTRIBUTION OF EBS AND HOUSEHOLDS IN 2014 MALDIVES CENSUS FRAME FOR ADMINISTRATIVE ISLANDS BY ATOLL	21
TABLE 2. DISTRIBUTION OF EBS AND HOUSEHOLDS IN 2014 MALDIVES CENSUS FRAME FOR ADMINISTRATIVE ISLANDS BY ATOLL AND ISLAND POPULATION SIZE	22
TABLE 3. PROPOSED ALLOCATION OF SAMPLE EBS AND HOUSEHOLDS IN ADMINISTRATIVE ISLANDS BY ATOLL FOR 2019 HIES	23
TABLE 4. ASSIGNMENT OF THE HIES SAMPLE EBS BY ATOLL AND MONTH	24

1. INTRODUCTION

1.1 Background

As part of the planning process to conduct the 2019/2020 Household Income and Expenditure Survey (HIES), National Bureau of Statistics (NBS), prepared the sample design during early 2019. As this is a regular survey conducted by NBS, the sample design was improved based on the limitations identified in previous survey coverage, and to cater for the spatial planning requirements of the government. In this regard sample sizes of selected islands were increased to enable representation of results at the level of these islands.

Sample design also incorporated selected non-administrative islands and collective living quarters (more than 10 persons), broadening the scope of the survey. This was to make the employment statistics from HIES more comprehensive¹.

The first nationwide HIES conducted in 2002-2003 covered 834 households from the capital Male' and 40 islands randomly selected from all the Atolls. The second national wide HIES conducted in 2009-2010 covered 600 households from the capital Male' and 1,460 households from the islands randomly selected from all the Atolls.

The third HIES conducted in 2016, covered 330 enumeration blocks, randomly selected from all 20 administrative Atolls and Male' with a sample of 4,985 households. HIES 2016 was the first HIES which provides data representative at the level of all 20 atolls in addition to capital island Male'. Previously HIES data was representative for Male' versus Atolls as a whole.

HIES surveys as of now covers only administrative islands and represents normal households living in administrative islands. As a result, employment analysis using HIES, shows under coverage of employment in tourism and construction industries. Thus, HIES 2019/2020 will cover this population residing in tourist resorts, industrial islands and labour quarter with more than ten people, to improve coverage of the labour market. This is the

1 This is to improve the coverage of tourism and construction industry employment. Tourism industry employees live in resorts which are non-administrative islands. Similarly, construction industry employs large number of foreign migrant workers, who are accommodated in labour quarters. In the absence of a labour force survey in the country, HIES 2019 has to cater for this data as well. HIES includes a comprehensive labour force module and with improved coverage of these tourist resorts and Labour quarters (10 + people) will help improve labour market data from HIES.

fourth such nationwide survey.

HIES 2019-2020 sample design has 4 domains, i.e. administrative islands, resort, industrial island and labour quarter. In the administrative island, the sample design and sample size make it possible to perform analyses for Maldives as a whole, for Male', Hulhumale and for the 20 Atolls of the country. Additionally, estimates will be available for the Atolls as a whole.

When the first case of COVID-19 was reported in the country, the survey was on going. However, once the state of Health emergency was declared in the country, field work across the country had to suspended. When the survey was disrupted, 72% of the households were covered in Male' and 86% of the field work was completed in Atolls. (with 3 out of 20 Atolls left untouched) Additionally, resort sector was also not covered.

The pandemic lasted much longer than envisaged, having a huge impact on the economy and the key industry tourism and its supply chain, affecting household incomes, expenditures and loss of employment and people's livelihoods across the country. Given the situation, continuation of the survey, will not provide data that is comparable to pre-COVID situation and it was discontinued. In order to provide the data for recovery planning as the earliest, decision was made to use the data collected pre-COVID and use it to generate survey results at more aggregated level that was possible (representative at the national level of Male' and 20 Atolls combined)².

This sampling note will cover only the sample design of administrative islands component³. It will also highlight the adjustments brought to the original sample design and the level of representation of results generated from HIES 2019, due to the disruptions in field work in the wake of COVID-19 pandemic.

² *Plans are underway to conduct a COVID-19_impact assessment survey covering a sub-sample of HIES 2019-2020 households covered in pre-COVID to assess the impact of the pandemic on key variables like household income at national level. This is to be conducted around March 2020.*

³ *The data collection for tourist resorts sample did not commence pre-COVID and hence this segment of HIES will be covered when the tourism industry has recovered and is back to a more normal situation. Given the tourism is the main industry in the Maldives, with borders closing tourism industry came to a standstill. Sampling strategies used for non-administrative islands and Labour Quarters will be provided in a separate document.*

1.2 Survey Objectives

The main objective of HIES is to produce reliable statistics on different components of income and expenditure of households. Data on the income side will specify occupation of household members and on the expenditure side – consumption items. The survey intends to produce independent estimates of household income and expenditure indicators for Male', Hulhumale' and for 20 Atolls. However, due to pandemic the survey result was only representative at national & Male' and Atolls (20 atolls combined).

One of the objectives of the 2019 HIES is to compare the results for poverty and other socioeconomic indicators to those from the 2016 HIES in order to determine trends at the Atoll level.

1.3 Importance and use of HIES results

HIES results will be of great statistical significance for socio-economic analysis. Its use in future statistical work will be particularly essential for following purposes:

- HIES data will show the most recent composition of consumption expenditure of households which will be used to update the CPI weights
- GDP estimates will be improved particularly for the components of final consumption expenditure of households, income and outlay and savings.
- HIES will measure the level of living and indicate the gap between different social strata
- Distribution of households will be analysed in terms of expenditure groups and proper statistical measure of inequality such as Gini coefficient can be presented.

1.4 Population covered

The Household Income and Expenditure Survey includes all the population residing in the Maldives except institutional population (for example, persons in prisons, hospitals, military barracks and school dormitories).

The Household Income and Expenditure Survey has 4 domains, i.e. Administrative islands, resort, industrial island and labour quarter. In the administrative island, the sample design and sample size makes it possible to perform analyses for Maldives as a whole, for Male', Hulhumale and for the 20 Atolls of the country. Additionally, estimates will be available for the Atolls as a whole.

In the case of other domains, the sample design and sample size makes it possible to perform the analyses for Maldives as a whole (for this domains detail is provided at the end of this document).

2. ADMINISTRATIVE ISLANDS (CORE) SAMPLE

In the administrative islands, the sample design and sample size makes it possible to perform analyses for Maldives as a whole, for Male', Hulhumale and for the 20 Atolls of the country. Additionally, estimates will be available for the Atolls as a whole.

There is also interest in obtaining HIES results at the national level for the following administrative island size groups: (1) less than 500 population; (2) 501 to 1000 population; (3) 1001 to 2000 population; and (4) greater than 2000 population. However, this grouping will be only obtained for administrative island domain.

For the administrative islands, the sampling procedure from HIES 2016 would be adopted.

In the selection of the HIES 2019/20 sample for administrative islands, a weighed, multi-stage, stratified sampling approach will be used. Sample selection will undertake in two stages. The first stage of selection will include the selection of Enumeration Blocks (EB) as primary sampling units from each stratum. The frame for the Enumeration Blocks (EB) selection was prepared using Population and Housing Census 2014. Systematic selection will be use to select the Enumeration Blocks (EB), with probability proportional to size and measurement unit is households.

In administrative islands, the second stage of sample selection involves the systematic selection of a fixed number of households from each Enumeration Blocks (EB), after conducting the listing process. Fifteen households will be selected from each Enumeration Blocks (EB). The total 5,415 households will be selected from administrative islands in HIES 2019/20.

2.1 HIES 2016

The data from the 2009/2010 HIES was used for tabulating the sampling errors and design effects for the estimates of average household expenditure and average household income. These results were used to determine the most effective sampling strategy for the 2016 HIES.

HIES 2016, adopted multi-stage, stratified sampling approach. In the first stage Enumeration Blocks (EB) was selected and households were selected in the second stage. For more information refer to <http://statisticsmaldives.gov.mv/nbs/wp-content/uploads/2016/03/HIES-Report-2016-Technical-Report-Updated.pdf>

2.2 Sample Frame

The sampling frame for the 2019 HIES is based on the summary data and cartography from the 2014 Maldives Population and Housing Census. The survey will cover all of the household-based population in the administrative islands of each atoll of the Maldives, but will exclude the institutional population (for example, persons in prisons, hospitals, military barracks and school dormitories).

A stratified two-stage sample design will be used for the HIES. The primary sampling units (PSUs) selected at the first stage for the administrative islands are the enumeration blocks (EBs), which are small operational areas defined on maps for the 2014 Census enumeration. The average number of households per EB is 65. Table 1 shows the distribution of the EBs and households in the 2014 Maldives Census frame for the administrative islands by atoll. We see that the percentage of households varies by atoll from 0.5% for atoll V to 35.0% for Male' (excluding Hulhumale). Table 1 also shows the average number of households per EB by atoll. We see in this table that the average number of households per EB varies from 58 for atoll V to 81 for GDH (refer to appendix).

Since the four administrative island size groups will also be domains for tabulating the HIES results, it is important to examine the distribution of the frame by size group. Table 2 shows the distribution of the EBs and households in the 2014 Census frame for the administrative islands by atoll and island population size group. We see in Table 2 (refer to appendix) that the distribution of the EBs in the frame by island size group varies considerably by atoll, and some atolls do not have any islands in the smallest size group as well as some other groups. Therefore, the frame cannot be stratified by island size at the atoll level. For this reason, the island size domains

can only be established at the national level. The island group with a population of 500 or less only has 59 EBs and 3,872 households in the frame. If the sample in each atoll is allocated to the island size groups in proportion to the number of households, the smallest island size group would not have a sufficient number of sample households to make reliable estimates. Therefore, a special strategy was used for increasing the probability of selection for the EBs in the smallest island group, as described later in this report.

Following the selection of sample EBs for the administrative islands at the first sampling stage, we will conduct a new listing of all households in each sample EB.

The sample selection methodology for the 2019 HIES is based on a stratified two-stage sample design. As described previously, the same sampling procedure as of HIES 2016 would be used. The procedures used for each sampling stage are described separately here.

2.3 First Sampling Stage - Selection of EB

At the first sampling stage, we select the sample EBs in the administrative islands for the 2019 HIES within each atoll systematically with PPS from the ordered list of EBs in the sampling frame. Within each atoll, we order the EBs by island number and EA number to provide additional implicit geographic stratification. The measure of size for each EB is based on the number of households in the 2014 Census sampling frame. However, in the case of the EBs in the small islands with a population of 500 or less, the measure of size is equal to 2 times the number of households to increase the probability of selection for the small islands, as described previously.

Within each atoll the following first stage sample selection procedures were used:

- (1) Cumulate the measures of size down the ordered list of EBs within the stratum (atoll). The final cumulated measure of size for the stratum is M_h .
- (2) To obtain the sampling interval for stratum h (I_h), divide M_h by the total number of EBs to be selected in stratum h (n_h): $I_h = M_h/n_h$.

(3) Select a random number (R_h) between 0 and I_h . The sample EBs in stratum h will be identified by the following selection numbers:

$$S_{hi} = R_h + [I_h \times (i - 1)], \text{ rounded up,}$$

where $i = 1, 2, \dots, n_h$

The i -th selected EB is the one with a cumulated measure of size closest to S_{hi} but not less than S_{hi} .

There were some atolls that had EBs with a measure of size that was larger than the sampling interval. In this case, EBs are selected with a probability of 1 and separated as self-representing (SR) PSUs. Then it is necessary to cumulate the measures of size of the remaining EBs in the frame for the atoll and calculate a new sampling interval to select the remaining (non-self-representing) sample EBs with PPS. Some of the SR sample EBs were from the small island group, given that the measure of size for these EBs is equal to the number of households times 2. The purpose of this procedure was to increase the probability of selection of the EBs in the small islands.

We used an Excel file for selecting the sample EBs in each atoll for the 2019 HIES following these procedures, based on the final allocation of the sample EBs shown in Table 3 (refer to appendix). The Excel file has a separate spreadsheet for each atoll. The columns of the spreadsheet include all the relevant sampling frame information for each EB. Each spreadsheet documents the first stage systematic selection of sample EBs with PPS for the corresponding atoll. The file includes a summary spreadsheet with the frame information for all 354 sample EBs. A copy of this spreadsheet with the sample EBs can be adapted later to include formulas for calculating the probabilities and weights based on the information in the frame. The number of households listed in each sample EB will have to be added to this weighting spreadsheet when this information becomes available.

2.4 Listing of Households

We decided to conduct a new listing of households in each sample EB prior to the 2019 HIES data collection to select the sample households. This is because to use the list of households from 2014 census, some households may have moved following the Census, and new houses have also been construction. So in order to give all the households equal chances of being selected, it was decided that a new listing would be taken. Once the listing has completed, the supervisor will verify the boundaries of the sample EB to ensure good coverage of the listed households for those islands where supervisors are stationed. Those islands without supervisors placed, the number of households listed in each sample EB will be compared to the corresponding number from the Census frame centrally, and any large discrepancies will be investigated. Additionally, we will do a visual check using the coordinates of the listing on a satellite map, to see if interviewers listed the whole location assigned.

2.5 Second Sampling Stage - Selection of Individuals

We will select a random systematic sample of 15 households from the listing for each sample EB. In the case of non-response up to 5 replacements will be done. The sample of households for each EB will be selected using the following procedures:

- (1) All the households in valid (occupied) housing units in the EB are assigned a serial number from 1 to M'_{hi} , the total number of households listed in the EB.
- (2) To obtain the sampling interval for the selection of households within the sample EB (I_{hi}), divide M'_{hi} by 15, and maintain at least 2 decimal places.
- (3) Select a random number (R_{hi}) between 0.01 and I_{hi} , with at least 2 decimal places. The sample households within the sample EB will be identified by the following selection numbers:

$$S_{hij} = R_{hi} + [I_{hi} \times (j-1)], \text{ rounded up,}$$

where $j = 1, 2, 3, \dots, 15$

The j -th selected household is the one with a serial number equal to Sh_{ij} .

In the case of administrative islands, the sample households for each sample EB are selected in the office, a spreadsheet can be used for calculating the sampling interval, generating the random start and identifying the systematic selection of households in the sample EB. If it is necessary to select the sample households in the field because of time constraints, it is recommended to use a household selection using the do-file. Using this method, the supervisor only has to run the do-file which identifies the household select using systematic sample and then can assign to the respective team.

2.6 Survey Waves & Temporal Allocation

It is also important to consider how to assign the sample EBs to the different months for the data collection. In order for the sample to represent seasonality geographically, it would be ideal to assign the sample EBs within each atoll equally across the different months. However, this was not possible due to resource and logistical constraints. The data collection for the 2019 HIES will be conducted over a 6-month period. In the case of the 47 sample EBs for Male' and the 25 sample EBs in Hulhumale, we will enumerate a systematic subsample of 8 EBs in the case of Male' each month for the first 5 months and 7 EBs for the last month to cover the seasonality. For Hulhumale, we will enumerate a systematic subsample of 4 EBs each month for the first 5 months and 5 EBs for the last month to cover the seasonality. However, for the other atolls it is only possible to enumerate each atoll during a particular month as the large distances result in logistical constraints. Based on the logistical considerations, the HIES team decided to make the monthly data collection assignments according to the scheme shown in Table 4 (refer to appendix).

3. INTERRUPTION OF THE SURVEY DUE TO COVID-19

Initially, the survey was designed to represent the sample at the national level, for Male', Hulhumale (one of the wards of capital city, Male') and for the each of the 20 Atolls.

When the first case of COVID-19 was reported in the country, the survey was on going. However, once the state of Health emergency was declared in the country, NBS decided to suspend field work across the country. By this time, many of the Atolls was covered and only few Atolls was remaining. In the case of Male' (including Hulhumale), out of the 72 EBs, 52 EBs was covered. This means 72% of the survey in the Male' was covered.

In the case of Atolls, 3 Atolls remains yet to be covered (i.e. Noonu, Meemu & Gnaviyani Atoll). In terms of EBs, out of the total 282 EBs in the Atolls, 242 EBs was covered. This means 86% of the field work was completed in the Atolls before the survey was brought to a hold.

The pandemic has lasted longer than previously envisaged, having a huge impact on households and peoples live such as household incomes, expenditure and employment. Considering the situation, if we continue the survey, the data we get will not be comparable to the data collected prior to COVID-19. Hence, NBS has decided to use the data which has already been collected and use it to generate survey results at the national level, Male' and Atolls (20 Atolls combined).

Technically, the current sample suffers from under coverage: a subset of elements of the target population did not have any chance of being selected in the sample, that is, their probability of selection into the sample was zero. Hence, in order to see whether the available sample can be assumed to be representative of the entire national population, a hypothesis tests was carried out. The key factor is to see whether the missing units, with respect to the original sample plan, can be assumed to be missing completely at random (MCAR). If that is the case, then estimates based on the existing sample would not suffer from any bias, and the price paid for a smaller sample would translate in a lower precision of the estimates- standard errors would be higher than planned.

To do so, a comparison between 2016 and 2019 HIES data: by focusing on variables expected to be relatively

stable over time, was checked to see the presence of significant/large gaps. If, for instance, the average household size in a given Atoll varied significantly between two surveys, this might signal that non-respondents are systematically different from respondents. Additionally, HIES 2016 data was investigated to the extent to which the three missing Atolls are different from the rest. Based on this investigation, it was found that there was no evidence of selection bias- non-respondents do not appear to be systematically different from respondents. Overall, the evidence suggests that the available sample can be assumed to be nationally representative- the reduced size will translate into standard errors larger than planned, but not dramatically. After recalibrating the expansion factors the analysis can be carried out based on the available data and the new weights.

Hence, the weights has been adjusted and below describes how this adjustments was carried out.

3.1 Estimation Procedures

3.2 Weighting Procedures

In order for the sample estimates from the 2019 HIES to be representative of the population, it is necessary to multiply the data by a sampling weight, or expansion factor. The basic weight for each sample household would be equal to the inverse of its probability of selection (calculated by multiplying the probabilities at each sampling stage).

3.3 How the adjustment of the weights was produced.

Basic weights

Based on the stratified two-stage sample design, the overall probability of selection for sample households in the 2019 HIES can be expressed as follows:

$$p_{hi} = \frac{n_h \times M_{hi}}{M_h} \times \frac{m_{hi}}{M'_{hi}},$$

where:

p_{hi} = probability of selection for the sample households in the i-th sample EB in stratum (atolls) h

n_h = number of sample EBs selected in stratum h for the 2019 HIES

M_h = cumulated measure of size for stratum h, based on the 2014 Census sampling frame

M_{hi} = total number of households in the frame for the i-th sample EB in stratum h

m_{hi} = number of sample households selected in the i-th sample EB in stratum h (generally equal to 15)

M'_{hi} = total number of households listed in the i-th sample EB in stratum h

The two components of this probability of selection correspond to the individual sampling stages.

The basic sampling weight, or expansion factor, is calculated as the inverse of this probability of selection. Based on the previous expression for the probability, the weight can be simplified as follows:

$$W_{hi} = \frac{M_h \times M'_{hi}}{n_h \times M_{hi} \times m_{hi}},$$

where:

W_{hi} = basic weight for the sample households in the i-th sample EB in stratum h

In the case of self-representing (SR) sample EBs selected with a probability of 1, the basic weight simplifies as follows:

$$W_{hi} = \frac{M'_{hi}}{m_{hi}}$$

3.4 Adjustments for the non-interviewed enumeration blocks

In case of Male', the initial sampling was designed to be represented at Male' and therefore there was no need to adjust the measurement of the size. However, there was some EBs, where field work was not carried out. So, it becomes important to adjust the weights to take into account the missing proportion. The adjusted weight (W'_{hi}) can be expressed as follows:

$$W'_{hi} = W_{hi} \times \frac{n_h}{n'_h},$$

where:

n_h = number of sample EBs selected in Male'

n'_h = number of sample EBs interviewed in Male'

In the case of Atolls, the initial sample was designed to represent the survey at 20 Atoll levels. However, as data collection was not carried out in 3 atolls and in order to bring the representation of total households in the Atolls (20 atoll combined), it was necessary to adjust the basic weights.

The adjusted weight (W'_{hi}) can be expressed as follows:

$$W'_{hi} = W_{hi} \times \frac{H_h}{h'_h},$$

where:

H_h = cumulated measure of size for All the Atolls, based on the 2014 Census sampling frame

h'_h = cumulated measure of size for those Atolls which was covered in the 2019 HIES, based on the 2014 Census sampling frame

3.5 Adjustments for the non-response

It is also important to adjust the weights to take into account the non-interview households in each sample EB. Since the weights will be calculated at the level of the sample EB, it would be advantageous to adjust the weights at this level. The final weight (W''_{hi}) for the sample households in the i -th sample EB in stratum h can be expressed as follows:

$$W''_{hi} = W'_{hi} \times \frac{m_{hi}}{m'_{hi}},$$

where:

m_{hi} = number of sample households selected in the i -th sample EB in stratum h

m'_{hi} = number of sample households with completed interviews in the i -th sample EB in stratum h

3.6 Final weights

In order to make all sets of individual weights consistent with the population estimates based on 2014 Census, it was necessary to calculate weight adjustment factors using population projection 2020.

The weight adjustment factor in the i -th sample EB in stratum h can be expressed as follows:

$$A_h = \frac{\widehat{P}_h}{\sum_{i \in h} \sum_j \sum_k W_{hijk}}$$

Where:

A_h = adjustment factor for the sample households selected in the i -th sample EA in stratum h

\widehat{P}_h = estimate of population for stratum h based on projections using Census 2014

$\sum_{i \in h} \sum_j \sum_k W_{hijk}$ = Sum of weights for all sample individuals in stratum h from 2019 HIES

The final weight (W'''_{hi}) for the sample households in the i -th sample EB in stratum h can be expressed as follows:

$$W'''_{hi} = W''_{hi} \times A_h$$

Where:

A_h = population adjustment factor for the sample households selected in the i -th sample EB in stratum h

W''_{hi} = Weight after adjusting for the non-interview households

4. APPENDIX

Table 1. Distribution of EBs and households in 2014 Maldives Census frame for Administrative Islands by atoll

Atoll	No. EBs in frame	No. households in frame	Percentage of households by atoll	Average no. households per EB
Male' (excluding Hulhumale)	389	22,959	35.0%	59
Hulhumale	47	2,776	4.2%	59
HA	42	2,748	4.2%	65
HDH	53	3,584	5.5%	68
SH	32	2,546	3.9%	80
N	31	2,195	3.3%	71
R	50	3,178	4.8%	64
B	28	1,874	2.9%	67
LH	25	1,665	2.5%	67
K	25	1,987	3.0%	79
AA	15	1,117	1.7%	74
ADH	22	1,434	2.2%	65
V	6	350	0.5%	58
M	14	963	1.5%	69
F	11	758	1.2%	69
DH	13	965	1.5%	74
TH	29	1,955	3.0%	67
L	33	2,510	3.8%	76
GA	23	1,768	2.7%	77
GDH	32	2,596	4.0%	81
GN	27	1,611	2.5%	60
S	54	4,000	6.1%	74
Maldives	1,001	65,539	100.0%	65

*Table 2. Distribution of EBs and households in 2014
Maldives Census frame for administrative islands by atoll and
island population size*

Atoll	500 or less population		501-1000 population		1001-2000 population		More than 2000 population	
	No. EBs	No. hhs.	No. EBs	No. hhs.	No. EBs	No. hhs.	No. EBs	No. hhs.
Male ¹ (excluding Hulhumale)	0	0	0	0	0	0	389	22,959
Hulhumale	0	0	0	0	0	0	47	2,776
HA	6	520	5	393	14	929	17	906
HDH	4	357	9	751	14	1,184	26	1,292
SH	5	368	9	737	14	1,046	4	395
N	4	302	9	711	12	809	6	373
R	4	306	6	550	30	1,724	10	598
B	7	481	7	596	6	312	8	485
LH	0	0	1	113	3	271	21	1,281
K	0	0	2	123	20	1,582	3	282
AA	3	191	6	456	6	470	0	0
ADH	4	282	7	534	0	0	11	618
V	3	127	3	223	0	0	0	0
M	4	238	7	497	3	228	0	0
F	1	65	6	431	4	262	0	0
DH	1	64	8	524	0	0	4	377
TH	9	413	10	850	10	692	0	0
L	3	97	14	1,055	4	304	12	1,054
GA	1	61	6	570	9	673	7	464
GDH	0	0	9	801	11	823	12	972
GN	0	0	0	0	0	0	27	1,611
S	0	0	0	0	12	938	42	3,062
	59	3,872	124	9,915	172	12,247	646	39,505

Table 3. Proposed allocation of sample EBs and households in administrative islands by atoll for 2019 HIES

Atoll	No. EBs in frame	No. sample EBs	No. sample households
Male' (excluding Hulhumale)	389	47	705
Hulhumale	47	25	375
HA	42	16	240
HDH	53	19	285
SH	32	16	240
N	31	15	225
R	50	18	270
B	28	14	210
LH	25	13	195
K	25	14	210
AA	15	12	180
ADH	22	12	180
V	6	6	180
M	14	12	180
F	11	11	180
DH	13	12	180
TH	29	14	210
L	33	16	240
GA	23	13	195
GDH	32	16	240
GN	27	13	195
S	54	20	300
Maldives	1,001	354	5,415

Table 4. Assignment of the HIES sample EBs by atoll and month

Atolls	Number of sample EBs by month					
	1	2	3	4	5	6
Male' (excluding Hulhumale)	8	8	8	8	8	7
Hulhumale	4	4	4	4	4	5
HA					16	
HDH			19			
SH						16
N				15		
R		18				
B					14	
LH	13					
K						14
AA				12		
ADH		12				
V					6	
M			12			
F	11					
DH					12	
TH			14			
L				16		
GA	13					
GDH		16				
GN	13					
S						20
Maldives	62	58	57	55	60	62



National Bureau of Statistics

Ministry of National Planning, Housing & Infrastructure,
Dharul Eman Building (7, 8, 9th Floor),
Majeedhee Magu,
Male 20345,
Republic of Maldives

info@stats.gov.mv

<http://statisticsmaldives.gov.mv>



[facebook.com/NBSMaldives](https://www.facebook.com/NBSMaldives)



[@statsmaldives](https://twitter.com/statsmaldives)